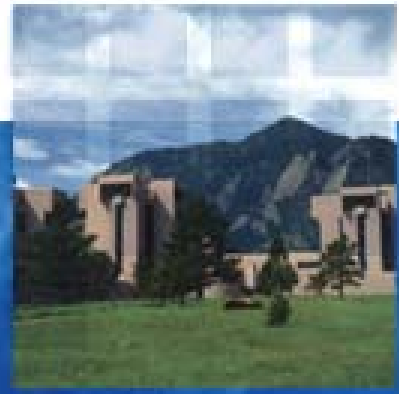
NCAR



Aura DSWG Standards Lessons Learned

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What is Aura?

- Third in series of EOS atmospheric chemistry satellites (1:45 PM equator crossing time)
- Formerly known as CHEM
- Scheduled launch date of January 2004
- Level 2 data products include:
  - Vertical profiles of temperature, pressure, chemical and aerosol species
  - Column amounts of chemical species
  - Cloud properties

Aura Instruments

- **HIRDLS (High Resolution Dynamics Limb Sounder)**
  - Limb infrared sounder
  - Joint University of CO and Oxford instrument team
- **MLS (Microwave Limb Sounder)**
  - Limb microwave sounder
  - Instrument team at JPL
- **OMI (Ozone Monitoring Instrument)**
  - Nadir wide-field-imaging spectrometer
  - Joint Netherlands, Finland and US instrument team
- **TES (Tropospheric Emission Spectrometer)**
  - Nadir and limb infrared-imaging spectrometer
  - Instrument team at JPL

Caveats

- Slightly premature
  - Have not launched
  - Just beginning to share data sets
  - Unknown what items might have missed
  - Success / failure has not been measured
- Certainly better than if no guidelines (could have ended up with HDF-EOS4 and HDF-EOS5 based files)
- Will discuss process to date

History of Guidelines for Aura Data

- Grassroots effort – based in Aura Data System Working Group (DSWG)
- HIRDLS and MLS – UARS experience with standard data files – saw benefits
- Discussed at early DSWG
- Instrument teams agreed would be useful and appointed one or more members to Guidelines group

History of Guidelines for Aura Data (2)

- HIRDLS created a “strawman” document
- Received extensive feedback from other instrument teams
- Conducted several telecons to discuss issues between DSWG semiannual meetings

Guidelines Approval Process

- Extensive use of email
  - Named authors – required to respond
  - Silent authors – could respond if desired
  - Document passed to members for extensive editing
- "Controversial" items were brought to individual teams for discussion by Guidelines group member(s)
- Telecons/DSWG breakout meetings held for items which required discussion
- Major releases of document voted upon at DSWG (formality as teams aware of status)

What do Guidelines Encompass?

- Guidelines identify the data library to use (HDF-EOS5 Swath)
- Guidelines describe the data "boxes"
  - Identified each instrument's fields and dimensions
  - Identified data overlap between instrument teams and created "standard boxes" for them

What do Guidelines Encompass? (2)

- "Box" characteristics require strict adherence
  - Names (spelling/spacing/case of letters)
  - Dimensions and dimension ordering
- Key – Make software-friendly
  - No need to identify grid spacing, units, etc.

What do Guidelines Encompass? (3)

- Identified attributes
  - Allow more machine automation
  - Add meaning to data (i.e. Units)
- Units
  - Initially only specified box
  - Were able to reach consensus on units, so no conversions required
- File Naming Conventions

What is not covered?

- No grid spacing requirements
  - Identified location of Pressure grid in file
  - Decided that Pressure will be ordered from ground to space
  - Software can automate interpolation/ subsampling to make arbitrary grid

Lessons Learned

- Communicate early, before individual team decisions on data files have been made
- Intercompare data sets early on
- Include software engineers and scientists in discussion group
- Be willing to compromise – will never match your "perfect data set" – remember benefits
- Be willing to modify over time

Lessons Learned (2)

- If using HDF5 or HDF-EOS5, can take advantage of H5Glink to keep instrument-specific names
- Standards leader – needs to be willing to not let the issues die

Document Location

http://www.eos.ucar.edu/hirdls/HDFEOS_Aura_File_Format_Guidelines.pdf